



(11) Publication number : **0 472 368 A3**

(12)

EUROPEAN PATENT APPLICATION

(21) Application number : **91307551.1**

(51) Int. Cl.⁵ : **A61B 17/22, A61B 17/38**

(22) Date of filing : **15.08.91**

(30) Priority : **21.08.90 US 570384**

(43) Date of publication of application :
26.02.92 Bulletin 92/09

(84) Designated Contracting States :
AT BE CH DE DK ES FR GB GR IT LI LU NL SE

(88) Date of deferred publication of search report :
11.03.92 Bulletin 92/11

(71) Applicant : **MED INSTITUTE, INC.**
1220 Potter Drive P.O. Box 2402
West Lafayette Indiana 47906 (US)

(72) Inventor : **Fearnot, Neal Edward**
3051 Hamilton
West Lafayette, Indiana 47906 (US)

(74) Representative : **Johnston, Kenneth Graham**
5 Mornington Road
Woodford Green Essex, IG8 OTU (GB)

(54) **Ablation catheter.**

(57) An ablation catheter is provided with an elongated member or shaft (110) and a plurality of helically-shaped cutting wires (104) attached to the shaft to form a cutting basket (150). Each of the cutting wires has a section formed as a circumferentially subscribing arc (105) and together the wires present a circumferential cutting area of an essentially cylindrical configuration. Each of the wires (104) comprises a first curved or straight section (123) extending from the distal end of shaft (110) to a discontinuity such as a corner or kink (125). Obstructing matter on the inner surface of a vessel cavity, such as a blood vessel or the like, is separated from the surface as the catheter is moved through the vessel. The catheter may be inserted in a vessel in a standard fashion using a wire guide (102) which extends through a longitudinal passageway in the shaft and a hub (103) interconnecting the basket wire. The shaft and basket together may be contained in an outer sheath to facilitate insertion. The outer sheath with the basket in a collapsed state in the outer sheath may be readily moved past an obstruction, and the sheath withdrawn to allow the basket to expand and come in contact with the interior surface of the vessel cavity. The proximal ends of the cutting wires extend from the shaft through a vibratory transducer, and the distal ends are connected together by a hub. Electrical current is applied to electrical terminals connected to the cutting wires at the proximal end of the shaft to heat the wires to facilitate separating obstructing matter from a vessel surface. Furthermore, the vibration transducer vibrates the cutting wires to further aid in separating plaque and obstructions from soft tissue such as the intima layer of the wall of a blood vessel.

EP 0 472 368 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 30 7551

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. CL.5)
A, D	EP-A-0 337 918 (FOGARTY) * column 2, line 32 - line 42; figures 1, 2 *	1	A61B17/22 A61B17/38
A	EP-A-0 152 032 (OLYMPUS) * page 4, line 10 - line 20; figure 1 *	1	
A	US-A-4 790 812 (HAWKINS, JR ET AL.) * column 3, line 9 - line 19; figure 1 *	1	
A	GB-A-2 116 046 (WOLF) * page 1, line 69 - line 95; figure 1 *	1	
A	DE-A-3 626 371 (OKADA) * abstract; figure 1 *	1	
A	DE-U-7 125 338 (DEYHLE) * claim 1; figures 1, 2 *	1	
			TECHNICAL FIELDS SEARCHED (Int. CL.5)
			A61B A61F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 DECEMBER 1991	Examiner MOERS R.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published no, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 (01.91) (P0401)